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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/810,022 | 03/25/2004 | Long-Sun Huang | DF-04900 | 7729 |
| 28960 | 7590 | 05/13/2005 | EXAMINER | |
| HAVERSTOCK & OWENS LLP 162 NORTH WOLFE ROAD SUNNYVALE, CA 94086 | | | THOMAS, BRANDI N | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2873 | |

DATE MAILED: 05/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------------|------------------|--|
| Office Action Summary | Application No. | Applicant(s) |  |
| | 10/810,022 | HUANG ET AL. | |
| | Examiner Brandi N. Thomas | Art Unit 2873 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-10, 12, 16-26 and 28 is/are rejected.
- 7) Claim(s) 11, 13-15, 27 and 29-31 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 25 March 2004 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>Detailed Action</u> . |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3-5, 12, 16, 18, 20, 21, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Solgaard et al. (6097859).

Regarding claims 1 and 16, Solgaard et al. disclose, in figures 3 and 5, a micro grating structure, comprising: a substrate (figure 5) (col. 4, lines 20-22); a first supporting structure and a second supporting structure (structure encasing reference numbers 46a-46c); a first structure post (52a) and a second structure post (52b), wherein said first structure post (52a) and said second structure post (52b) are mounted on said substrate (figure 5) (col. 4, lines 20-22) between said first supporting structure and a said second supporting structure (structure encasing reference numbers 46a-46c); and a grating (46a-46c) mounted between said first structure post (52a) and said second structure post (52b) and comprising a first, a second, a third and a fourth torsion beams (50a and 50b), wherein said first and said second torsion beams (50a and 50b) are connected to said first and said second supporting structures (structures encasing reference numbers 46a-46c) respectively (figure 3 shows the a first and second torsions beams connected

to the encasing of reference numeral 46), said third and said fourth torsion beams (50a and 50b) are connected to said first and said second structure posts (52a and 52b) respectively (figure 3 shows a third and fourth torsion beams connected to post) (col. 4, lines 9-22), and said first, said second, said third and said fourth torsion beams are twisted by an electrostatic force so as to enable said grating to be inclined at an angle with respect to said substrate (col. 6, lines 62-67).

Regarding claims 3 and 18, Solgaard et al. disclose, in figures 3 and 5, a micro grating structure, wherein the substrate is a silicon substrate (col. 7, lines 48-50).

Regarding claims 4 and 20, Solgaard et al. disclose, in figures 3 and 5, a micro grating structure, wherein said first and second support structures (structures encasing reference numbers 46a-46c), said first and second structure posts (52a and 52b), said grating (46) and said first, said second, said third, said fourth torsion beams (50a and 50b) are made of a low stress silicon nitride (col. 2, lines 11-15 and 37-40).

Regarding claims 5 and 21, Solgaard et al. discloses a micro-grating structure, wherein said first and said second supporting structures (structures encasing reference numbers 46a-46c), said grating (46) and said first, said second, said third and said fourth torsion beams (50a and 50b) further comprise an electric conductive (electrodes) and light reflective layer (mirror) thereon (col. 4, lines 15-24).

Regarding claims 12 and 28, Solgaard et al. discloses a micro-grating structure, wherein a space is located among said first and said second supporting structures (structures encasing reference numbers 46a-46c), said grating (46) and said substrate (figure 5) (figure3).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 6, 17, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Solgaard et al. (6097859).

Regarding claims 2 and 17, Solgaard et al. discloses a micro-grating structure containing a substrate (figure 5) but does not specifically disclose the substrate being a semiconductor substrate. It would have been obvious to use a semiconducting substrate, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use (In re Leshin, 125 USPQ 416). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use of semiconducting substrate for the purpose of its ability to conduct electricity falls between that of conductors and insulators.

Regarding claims 6 and 22, Solgaard et al. discloses a micro-grating structure containing electric conductive and reflective layers but does not specifically disclose the electric conductive and reflective layers made of gold. It would have been obvious to use a semiconducting substrate, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use (In re Leshin, 125 USPQ 416). Therefore it would have been obvious to one having ordinary skill in the art at the time the

invention was made to use of semiconducting substrate for the purpose of its ability to conduct electricity.

6. Claims 7-10 and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Solgaard et al. (6097859) as applied to claim 1 above, and further in view of Neukermans et al. (6694072).

Regarding claims 7 and 23, Solgaard et al. discloses a micro grating but does not specifically disclose an adhesion layer. Neukermans et al. discloses an adhesive layer with metallic (col. 18, lines 1-4). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use an adhesive layer for the purpose of bonding the electric conductive and reflective layers together.

Regarding claims 8 and 24, Neukermans et al. disclose a micro grating wherein said adhesion layer is made of material selected from a group consisting of chromium, titanium, and tungsten-titanium alloy (col. 18, lines 1-4).

Regarding claims 9 and 25, Solgaard et al. discloses a micro-grating structure wherein the electric conductive and reflective layers generate and electrostatic force (col. 6, lines 62-64) but does not specifically disclose the electrostatic force generated by an external power source. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use an external power source for the purpose of maintain a compact structure.

Regarding claims 10 and 26, Solgaard et al. discloses a micro-grating structure wherein a light is diffracted on said electric conductive and light reflective layers of said grating when said grating is inclined (col. 4, lines 15-17).

Allowable Subject Matter

7. Claims 11, 13-15, 27, and 29-31 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claim(s), in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in claim(s) 11, 13-15, 27, and 29-31, wherein the claimed invention comprises wherein said light is reflected on said electric conductive and light reflective layer of said grating after said grating is returned to normal, which is resulting from a recuperative force of said first, said second, said third and said fourth torsion beams generated after said electrostatic force vanishes; wherein the first and second torsion beams have an identical deformation when twisted and wherein the third and fourth torsion beams have an identical deformation when twisted and an angle between 0 and 1 degree, as claimed.

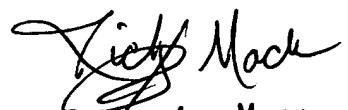
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandi N. Thomas whose telephone number is 571-272-2341. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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RICKY L. MACK
PRIMARY EXAMINER